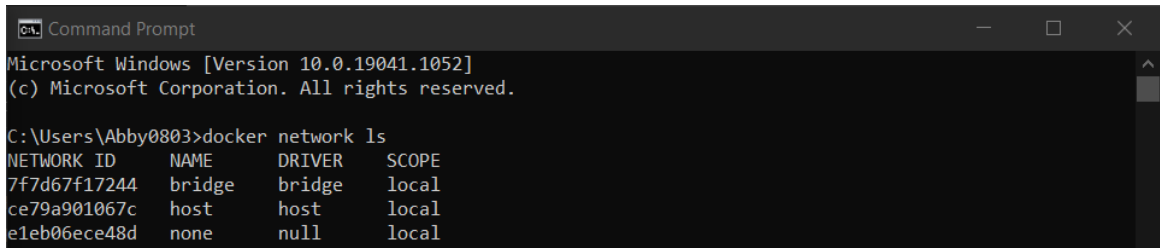


# Activity 06 - Networking

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de Padua, Jean Abigail d. | 201801325

## Listing networks



```
Command Prompt
Microsoft Windows [Version 10.0.19041.1052]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Abby0803>docker network ls
NETWORK ID          NAME                DRIVER              SCOPE
7f7d67f17244        bridge             bridge             local
ce79a901067c        host              host              local
e1eb06ece48d        none              null              local
```

## The default bridge network

```

C:\Users\Abby0803>docker network inspect bridge
[
  {
    "Name": "bridge",
    "Id": "7f7d67f17244a4d4ec3fc291a8928721e06b76cbb1cc46c6fad6a57144930fdd",
    "Created": "2021-06-14T05:29:19.885251Z",
    "Scope": "local",
    "Driver": "bridge",
    "EnableIPv6": false,
    "IPAM": {
      "Driver": "default",
      "Options": null,
      "Config": [
        {
          "Subnet": "172.17.0.0/16",
          "Gateway": "172.17.0.1"
        }
      ]
    },
    "Internal": false,
    "Attachable": false,
    "Ingress": false,
    "ConfigFrom": {
      "Network": ""
    },
    "ConfigOnly": false,
    "Containers": {
      "c39f18cd323538ba004b73561d4388732a4e5a4dedb0b84e604a7a38347f4e14": {
        "Name": "apache",
        "EndpointID": "2771b30a24962770ac1d26cad84d99b0cfee84a90d224d2f2bcca6e41fa44ba",
        "MacAddress": "02:42:ac:11:00:02",
        "IPv4Address": "172.17.0.2/16",
        "IPv6Address": ""
      }
    },
    "Options": {
      "com.docker.network.bridge.default_bridge": "true",
      "com.docker.network.bridge.enable_icc": "true",
      "com.docker.network.bridge.enable_ip_masquerade": "true",
      "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
      "com.docker.network.bridge.name": "docker0",
      "com.docker.network.driver.mtu": "1500"
    },
    "Labels": {}
  }
]

```

```

C:\Users\Abby8803>docker run --rm -d --name dummy 201801325/ping:1.0
9888a8829e317ee567df65416ac9ed40c25ef9837ec7bc0cdf33df3101d5fb6d

C:\Users\Abby8803>docker network inspect bridge
{
  "Name": "bridge",
  "Id": "77f6d71724a4addce3fc291a8928721e06b76cbb1cc46c6fad6a57144930fdd",
  "Created": "2021-06-14T05:29:19.885251Z",
  "Scope": "local",
  "Driver": "bridge",
  "EnableIPv6": false,
  "IPAM": {
    "Driver": "default",
    "Options": null,
    "Config": [
      {
        "Subnet": "172.17.0.0/16",
        "Gateway": "172.17.0.1"
      }
    ]
  },
  "Internal": false,
  "Attachable": false,
  "Ingress": false,
  "ConfigFrom": {
    "Network": ""
  },
  "ConfigOnly": false,
  "Containers": {
    "9888a8829e317ee567df65416ac9ed40c25ef9837ec7bc0cdf33df3101d5fb6d": {
      "Name": "dummy",
      "EndpointID": "2f883b293d9bb150b97f38031ef6f71c22d4f9b8c01356f9d6fd9505fe547dcd",
      "MacAddress": "02:42:ac:11:00:03",
      "IPv4Address": "172.17.0.3/16",
      "IPv6Address": ""
    },
    "c39f18cd323538ba004b73561d4388732a4e5a4dedb0b84e604a7a38347f4e14": {
      "Name": "apache",
      "EndpointID": "2771b30a24962778ac1d26cad84d99b0cfee84a98d224d2f2bcca6e41fad4ba",
      "MacAddress": "02:42:ac:11:00:02",
      "IPv4Address": "172.17.0.2/16",
      "IPv6Address": ""
    }
  },
  "Options": {
    "com.docker.network.bridge.default_bridge": "true",
    "com.docker.network.bridge.enable_icc": "true",
    "com.docker.network.bridge.enable_ip_masquerade": "true",
    "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
    "com.docker.network.bridge.name": "docker0",
    "com.docker.network.driver.mtu": "1500"
  },
  "Labels": {}
}

```

```

  },
  "Options": {
    "com.docker.network.bridge.default_bridge": "true",
    "com.docker.network.bridge.enable_icc": "true",
    "com.docker.network.bridge.enable_ip_masquerade": "true",
    "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
    "com.docker.network.bridge.name": "docker0",
    "com.docker.network.driver.mtu": "1500"
  },
  "Labels": {}
}

```

```

C:\Users\Abby8803>docker run --rm -d -e PING_TARGET=172.17.0.2 --name pinger 201801325/ping:1.0
bac9330e4b624aa31eac600dd0fa2c049ce48e1757b1eb22091571ad61d981

C:\Users\Abby8803>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
bac9330e4b62   201801325/ping:1.0   "sh -c 'ping $PING_I..."   7 seconds ago   Up 5 seconds   -                                   pinger
9888a8829e31   201801325/ping:1.0   "sh -c 'ping $PING_I..."   About a minute ago   Up About a minute   -                                   dummy
c39f18cd3235   httpd:2.4        "httpd-foreground"         22 minutes ago   Up 22 minutes   0.0.0.0:80->80/tcp, :::80->80/tcp   apache

C:\Users\Abby8803>docker logs pinger
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.188 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.113 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.149 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.106 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.150 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.138 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.105 ms
64 bytes from 172.17.0.2: icmp_seq=10 ttl=64 time=0.107 ms
64 bytes from 172.17.0.2: icmp_seq=11 ttl=64 time=0.116 ms
64 bytes from 172.17.0.2: icmp_seq=12 ttl=64 time=0.123 ms
64 bytes from 172.17.0.2: icmp_seq=13 ttl=64 time=0.118 ms
64 bytes from 172.17.0.2: icmp_seq=14 ttl=64 time=0.137 ms

C:\Users\Abby8803>docker run --rm -d -e PING_TARGET=dummy --name pinger 201801325/ping:1.0
docker: Error response from daemon: Conflict. The container name "/pinger" is already in use by container "bac9330e4b624aa31eac600dd0fa2c049ce48e1757b1eb22091571ad61d981". You have to remove (or rename) that c
ontainer to be able to reuse that name.
See 'docker run --help'.

C:\Users\Abby8803>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS                               NAMES
bac9330e4b62   201801325/ping:1.0   "sh -c 'ping $PING_I..."   About a minute ago   Up About a minute   -                                   pinger
9888a8829e31   201801325/ping:1.0   "sh -c 'ping $PING_I..."   2 minutes ago     Up 2 minutes     -                                   dummy
c39f18cd3235   httpd:2.4        "httpd-foreground"         23 minutes ago     Up 23 minutes     0.0.0.0:80->80/tcp, :::80->80/tcp   apache

```

## Managing custom networks

```
Command Prompt

C:\Users\Abby0803>docker network create skynet
9aa68d22344cb1c89bcb598d234ec7544dbef016a4c3caff7046ceb0a122ebd1

C:\Users\Abby0803>docker network ls
NETWORK ID        NAME        DRIVER        SCOPE
7f7d67f17244     bridge     bridge        local
ce79a901067c     host       host          local
e1eb06ece48d     none       null          local
9aa68d22344c     skynet     bridge        local

C:\Users\Abby0803>docker network inspect skynet
[
  {
    "Name": "skynet",
    "Id": "9aa68d22344cb1c89bcb598d234ec7544dbef016a4c3caff7046ceb0a122ebd1",
    "Created": "2021-06-14T07:21:16.4847386Z",
    "Scope": "local",
    "Driver": "bridge",
    "EnableIPv6": false,
    "IPAM": {
      "Driver": "default",
      "Options": {},
      "Config": [
        {
          "Subnet": "172.18.0.0/16",
          "Gateway": "172.18.0.1"
        }
      ]
    },
    "Internal": false,
    "Attachable": false,
    "Ingress": false,
    "ConfigFrom": {
      "Network": ""
    },
    "ConfigOnly": false,
    "Containers": {},
    "Options": {},
    "Labels": {}
  }
]
```

## Adding containers to a network

```

}
}
C:\Users\Abby0803>docker run --rm -d --network skynet -e PING_TARGET=dummy --name pinger 201801325/ping:1.0
docker: Error response from daemon: Conflict. The container name "/pinger" is already in use by container "bac9330e4b624aa31eac600ddfa2c049ce448e1757b1e1b22091571ad61d981". You have to remove (or rename) that container to be able to reuse that name.
See 'docker run --help'.

C:\Users\Abby0803>docker logs pinger
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data:
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.180 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.113 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.149 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.106 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.150 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.138 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.105 ms
64 bytes from 172.17.0.2: icmp_seq=10 ttl=64 time=0.107 ms
64 bytes from 172.17.0.2: icmp_seq=11 ttl=64 time=0.116 ms
64 bytes from 172.17.0.2: icmp_seq=12 ttl=64 time=0.123 ms
64 bytes from 172.17.0.2: icmp_seq=13 ttl=64 time=0.118 ms
64 bytes from 172.17.0.2: icmp_seq=14 ttl=64 time=0.137 ms
64 bytes from 172.17.0.2: icmp_seq=15 ttl=64 time=0.119 ms
64 bytes from 172.17.0.2: icmp_seq=16 ttl=64 time=0.125 ms
64 bytes from 172.17.0.2: icmp_seq=17 ttl=64 time=0.100 ms
64 bytes from 172.17.0.2: icmp_seq=18 ttl=64 time=0.104 ms
64 bytes from 172.17.0.2: icmp_seq=19 ttl=64 time=0.166 ms
64 bytes from 172.17.0.2: icmp_seq=20 ttl=64 time=0.138 ms
64 bytes from 172.17.0.2: icmp_seq=21 ttl=64 time=0.168 ms
64 bytes from 172.17.0.2: icmp_seq=22 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=23 ttl=64 time=0.100 ms
64 bytes from 172.17.0.2: icmp_seq=24 ttl=64 time=0.111 ms
64 bytes from 172.17.0.2: icmp_seq=25 ttl=64 time=0.109 ms
64 bytes from 172.17.0.2: icmp_seq=26 ttl=64 time=0.116 ms
64 bytes from 172.17.0.2: icmp_seq=27 ttl=64 time=0.126 ms
64 bytes from 172.17.0.2: icmp_seq=28 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=29 ttl=64 time=0.114 ms
64 bytes from 172.17.0.2: icmp_seq=30 ttl=64 time=0.105 ms
64 bytes from 172.17.0.2: icmp_seq=31 ttl=64 time=0.122 ms
64 bytes from 172.17.0.2: icmp_seq=32 ttl=64 time=0.103 ms
64 bytes from 172.17.0.2: icmp_seq=33 ttl=64 time=0.132 ms
64 bytes from 172.17.0.2: icmp_seq=34 ttl=64 time=0.111 ms
64 bytes from 172.17.0.2: icmp_seq=35 ttl=64 time=0.100 ms
64 bytes from 172.17.0.2: icmp_seq=36 ttl=64 time=0.165 ms
64 bytes from 172.17.0.2: icmp_seq=37 ttl=64 time=0.140 ms
64 bytes from 172.17.0.2: icmp_seq=38 ttl=64 time=0.105 ms
64 bytes from 172.17.0.2: icmp_seq=39 ttl=64 time=0.132 ms
64 bytes from 172.17.0.2: icmp_seq=40 ttl=64 time=0.135 ms

```

## Connecting between containers in a network

```

C:\Users\Abby0803>docker run --rm -d --name widgetdb -e POSTGRES_PASSWORD=password --network skynet -p 5432 postgres
5419c27bff3125b460196ac953b29f565b3a195706db5e37cf6f383595373a1f

C:\Users\Abby0803>docker run --rm -d --name gadgetdb -e POSTGRES_PASSWORD=password --network skynet -p 5432 postgres
f56aedfa0a7303f54c1079fd4cf27e2588d82a0791625e88a1ec70371a02610a

C:\Users\Abby0803>docker ps
CONTAINER ID   IMAGE      COMMAND                  CREATED        STATUS        PORTS                               NAMES
f56aedfa0a73   postgres  "docker-entrypoint.s..." 6 seconds ago  Up 5 seconds  0.0.0.0:54081->5432/tcp             gadgetdb
5419c27bff31   postgres  "docker-entrypoint.s..." 43 seconds ago  Up 41 seconds  0.0.0.0:54054->5432/tcp             widgetdb
bac9330e4b62   201801325/ping:1.0  "sh -c 'ping $PING_T..." 10 minutes ago  Up 10 minutes  ping
9888a8829e31   201801325/ping:1.0  "sh -c 'ping $PING_T..." 12 minutes ago  Up 12 minutes  dummy
c39f18cd3235   httpd:2.4  "httpd-foreground"       32 minutes ago  Up 32 minutes  0.0.0.0:80->80/tcp, :::80->80/tcp  apache

C:\Users\Abby0803>docker exec -it widgetdb /bin/bash
root@5419c27bff31:/# psql -U postgres
psql (13.3 (Debian 13.3-1.pgdg100+1))
Type "help" for help.

postgres=# \q

```

## Binding ports to the host

```

C:\Users\Abby0803>docker run --rm -d --name widgetdb -e POSTGRES_PASSWORD=password --network skynet -p 5432 postgres
5419c27bff3125b460196ac953b29f565b3a195706db5e37cf6f383595373a1f

C:\Users\Abby0803>psql -U postgres -h localhost
'psql' is not recognized as an internal or external command,
operable program or batch file.

```